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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/560,425

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Armando Annunziato

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EXAMINER

CHAMBERS, TANGELA T

ART UNIT

PAPER NUMBER

2617

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,425	Applicant(s) ANNUNZIATO ET AL.	
	Examiner TANGELA T. CHAMBERS	Art Unit 2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 September 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 27-52 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-52 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment and arguments filed on 9/21/2009.
 - (a) Claims 1-26 are cancelled.
 - (b) Claims 27-52 are rejected.

Response to the Arguments

2. The applicant's arguments filed on 9/21/2009 have been fully considered, but they are not persuasive. In the Remarks, the applicant has argued in substance:

(1) The applicant argued features, ie. determining at least one location coordinate of a mobile terminal, using statistical filtering to provide at least one additional state which represents measurement errors in addition to the location coordinate, wherein the measurement errors represented are non-zero mean errors and determining at least one location coordinate of the mobile terminal from the state-based statistical filtering.

Response:

- (1) The argued features read upon Riley in view of Phelts.

Riley discusses determining the position location of a mobile terminal within a network using various techniques. Thus Riley shows the limitation “determining at least one location coordinate of a mobile terminal”.

Riley discusses using statistical processing to determine the most appropriate Forward Link Calibration (FLC) value to correct position fix errors of a mobile terminal. Thus Riley shows the limitation “providing in said statistical filtering at least one further state in addition to said at least one location coordinate, said at least one further state being representative of said measurement errors”.

Riley discusses determining a final position location (value and error estimate) for a mobile terminal based on the statistical processing. Thus Riley shows the limitation “determining from said state-based statistical filtering said at least one location coordinate of said terminal”.

Riley discusses using statistical filtering and measurement errors in location determination but does not specifically disclose the errors are non-zero mean errors; thus Riley is modified with Phelts to show such features were obvious in the art at the time the invention was made. Phelts teaches determining the location of a mobile terminal using statistical filtering subject to errors which are not zero mean.

(2) In response to the applicant's argument that the cited portions of the references do not teach the claimed invention, the examiner would like to respectfully point out that certain paragraphs have been cited in the references and applied to the claims above for the convenience of the applicant. However, the specified citations are merely representative of the teachings of the art; other passages and figures may apply as well. The references must be fully considered in entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner. See MPEP 2141.02 and MPEP 2123.

(3) In response to the applicant's argument that the references are not combinable, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

(4) Regarding the applicant's arguments within several of the dependencies, Riley as discussed above discloses those limitations, or Riley as modified by the secondary references show those limitations.

As a result the argued features are shown by Riley in view of secondary references read upon the art as follows:

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 27-29, 31-37, 39-46 and 49-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1) in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1).

As per claims 27, 35 and 44, Riley discloses:

- ***A method for determining at least one location coordinate of a mobile terminal with respect to a set of reference elements adapted to send radioelectric signals toward said mobile terminal***, (Riley, Page 1, Paragraphs [0005]-[0007]), Riley teaches a mobile terminal using reference elements to calculate its position.
- ***measuring said radioelectric signals to derive respective measurements***, (Riley, Pages 2-3, Paragraph [0028]).
- ***said measurements being affected by measurement errors***; (Riley, Page 7, Paragraph [0081]), Riley teaches measurements being affected by errors.
- ***subjecting such measurements to state-based statistical filtering***; (Riley, Page 2, Paragraph [0015], "After collection of multiple measurements upon the base station from one or more mobile stations from several different known locations, these measurements are used as input to a conventional position and time offset computation procedure, such as least squares, or a Kalman filter, as is commonly understood in the art of navigation (e.g., GPS and AFLT).").
- ***selecting at least part of said set reference elements as terrestrial reference elements***; (Riley, Page 1, Paragraph [0005] and Page 2, Paragraph [0015], "If the position and timing offset of the mobile station is determined from global position

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satellites or from a number of quality signals from base stations having known positions and timing offsets, then it is possible for the position and timing offset of the mobile station to be quite precise, often to approximately meter and nanosecond level accuracy.”).

- ***providing in said statistical filtering at least one further state in addition to said at least one location coordinate, said at least one further state being representative of said measurement errors***, (Riley, Page 4, Paragraph [0044] – Page 5, Paragraph [0051], Page 6, Paragraphs [0069]-[0071] and Page 8, Paragraph [0084], “[T]he mobile station position (value and error estimate), mobile station timing offset (value and error estimate), and pseudorange measurement (value and error estimate) are used to improve the base station position[.]”).
- ***determining from said state-based statistical filtering said at least one location coordinate of said terminal***, (Riley, Pages 2-3, Paragraphs [0015] and [0028] and Page 7, Paragraph [0082], “[T]he conventional use of the computation procedure [is] for computing the position and time offset of a mobile station from the known positions and known time offsets of multiple base stations.”).

Riley discloses statistical filtering and measurement errors in location determination but does not specifically disclose:

- ***wherein said errors are non-zero mean errors***, However, Phelts in an analogous art discloses the limitation. (Phelts, Page 2, Paragraphs [0011]-[0012], Pages 4-5, Paragraph [0050] and Page 11, Paragraphs [0112]-[0115], “The tracking error in the pseudorange measurement propagates to position, velocity, and other measurements, and is therefore highly detrimental to the accuracy of the system. Multipath tracking errors are difficult to remove for a number of reasons. Multipath errors are not zero mean, particularly for large amplitude MP signals, so that even infinite smoothing of the computed pseudorange cannot guarantee unbiased position errors.”)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Phelts into the teaching of Riley

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to have non-zero mean errors. The modification would be obvious because one of ordinary skill in the art would want the benefit of reducing the effects of multipath in radio communications systems. (Phelts, Page 1, Paragraph [0003]).

As per claim 28, 36 and 45, Riley further discloses:

- ***wherein said statistical filtering is Kalman filtering***, (Riley, Page 2, Paragraph [0015], Page 6, Paragraph [0070] and Pages 8, Paragraph [0085], “[I]t is possible to use a filter, such as a Kalman filter, in order to improve continuously the value of the base station position and timing offset.”).

As per claim 29, 37 and 46, Riley further discloses:

- ***associating with said respective measurements at least one additional measurement indicative of at least one of the location and displacement of said mobile terminal***, (Riley, Page 1, Paragraph [0005] and Pages 2-3, Paragraph [0028], “The CDMA network is capable of locating the position of the AFLT mobile station 22 and the hybrid mobile station 23 using the well-known AFLT technique of the mobile station measuring the time of arrival of so-called pilot radio signals from the base stations.”).

As per claim 31 and 39, Riley further discloses:

- ***including in said set of reference elements at least one satellite-based reference element of a satellite-based positioning system***, (Riley, Abstract and Page 1, Paragraphs [0005]-[0006] and Page 2, Paragraph [0027] – Page 3, Paragraph [0030], “A more advanced technique is hybrid position location, where the mobile station employs a Global Positioning System (GPS) receiver and the position is computed based on both AFLT and GPS measurements.”).

As per claim 32, 40 and 49, Riley further discloses:

- ***wherein measuring said radioelectric signals comprises the step of determining at least one parameter selected from the group consisting of: power***

received at said mobile terminal from said set of reference elements, timing advance, round trip time, observed time differences, and observed time differences of arrival, (Riley, Page 2, Paragraph [0026] and Page 4, Paragraph [0042]), Riley teaches measuring radio-electric signals to determine the observed time differences.

As per claim 33 and 41, Riley further discloses:

- ***selecting at least part of said set of reference elements as elements comprising, together with said mobile terminal, a terrestrial cellular communication system***, (Riley, Fig. 1 and Page 2, Paragraphs [0025]-[0026], "FIG. 1 shows a CDMA cellular telephone network using a GPS system for locating mobile telephone units and calibrating base stations.").

As per claims 34, 43 and 50, they are rejected under the same reasons set forth in connection of the rejections of claims 27 and 31.

As per claim 42, Riley further discloses:

- ***wherein at least one of said measurement module and said processing module includes a first portion hosted by said mobile terminal and a second portion hosted by a location center, wherein said first and second portions are arranged for data exchange over said terrestrial cellular communication system***, (Riley, Page 3, Paragraph [0031], "A mobile positioning center (MPC) 36 is connected to mobile switching center (MSC) 34. The MPC 36 manages position location applications and interfaces location data to external data networks through an interworking function (IWF) 37 and a data network link 38.").

Claims 30, 38, 47 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1) and in further view of McBurney et al (McBurney) (US Patent No. 6,055,477 A).

As per claim 30, 38 and 47, Riley teaches measuring an antenna position including the altitude in order to determine position information but does not specifically disclose:

- ***measuring an altitude coordinate of said mobile terminal***, However, McBurney in an analogous art discloses the limitation. (McBurney, Abstract and Column 7, Line 60 – Column 8, Line 24, “An altimeter, barometer or other altitude sensor can provide altitude or elevation information that is accurate to within 10-20 meters, depending upon the time elapsed since the last calibration, the quality of the last calibration and the local rate of change of barometric pressure.”).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of McBurney into the teaching of Riley and Phelts to measure an altitude coordinate of a mobile terminal. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving an integration of measurements to provide better accuracy of two-dimensional and/or three-dimensional location coordinates than with one instrument's location coordinate(s) alone. (McBurney, Column 7, Lines 52-59).

As per claim 51, it is rejected under the same reasons set forth in connection of the rejections of claims 27 – 34.

Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1), and in further view of Hoshino et al (Hoshino) (US Patent No. 6,081,230 A).

As per claim 48, Riley teaches obtaining the location of a mobile terminal but does not specifically disclose:

- ***wherein the terminal is mounted on a vehicle, and said at least one additional measurement is indicative of at least one of the location and***

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displacement of said vehicle, However, Hoshino in an analogous art discloses the above limitation. (Hoshino, Fig. 11 and Column 27, Lines 35-45).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Hoshino into the teaching of Riley and Phelts to have the terminal mounted on a vehicle to indicate location and displacement of the vehicle. The modification would be obvious because one of ordinary skill in the art would want the benefit of achieving a navigation system which enhances positioning accuracy without employing any sensor of high precision. (Hoshino, Column 5, Lines 20-53).

Claim 52 is rejected under 35 U.S.C. 103(a) as being unpatentable over Riley et al (Riley) (US Patent Publication No. 2003/0125046 A1), in view of Phelts et al (Phelts) (US Patent Publication No. 2002/0101912 A1), in view of McBurney et al (McBurney) (US Patent No. 6,055,477 A), and in further view of Hoshino et al (Hoshino) (US Patent No. 6,081,230 A).

As per claim 52, it is rejected under the same reasons set forth in connection of the rejections of claims 44 – 50.

Conclusion

4. The prior art considered pertinent to applicant's disclosure is made of record and listed on form PTO-892.

THIS ACTION IS MADE FINAL. See MPEP §706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANGELA T. CHAMBERS whose telephone number is 571-270-3168. The examiner can normally be reached Monday through Thursday, 10:00am-6:30pm Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro, can be reached at telephone number 571-272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Tangela T. Chambers/

Patent Examiner, Art Unit 2617

/NICK CORSARO/

Supervisory Patent Examiner, Art Unit 2617